

DEVICES FOR AIDING RESYNCHRONIZATION OF BODY CLOCKS

This invention relates to devices for aiding resynchronisation of body clocks, and more particularly but not exclusively to devices for assisting the re-normalisation of the biorhythms of travellers who have completed relatively long journeys including substantial longitudinal displacement (i.e., nett movement to East or West.)

This invention has particular application for individuals who undertake rapid flights across terrestrial time zones and have onerous business schedules that fail to allow for acclimatisation periods to recover from jet-lag, the effects of which include tiredness, depression, insomnia and inability to function with intellectual efficiency.

Jet-lag is caused by desynchronisation of personal circadian rhythms ("body clocks"). Circadian rhythms control a range of activities, including general metabolism, and patterns of sleep and intellectual concentration. These "body clocks" are set automatically to local time and conditions by reference to the duration of daylight. When a traveller crosses time zones, desynchronisation of the personal circadian rhythm results as the personal cues of dawn and dusk fail to occur at the biologically expected time.

It is therefore an object of the present invention to provide a device for aiding a traveller to obviate or mitigate the de-normalisation of biorhythms due to substantial longitudinal displacement.

According to the present invention there is provided a device for aiding resynchronisation of a personal body clock of a traveller, said device comprising a first data series representing the personal body time of the traveller and a second data series representing local time at the destination of the traveller, both said data series having representations of twenty-four hours and being displaceable with respect to each other, the mutual displacement of the data series being carried out with reference to the time of the departure of the traveller and the duration of the journey of the traveller to give a readable display of a procedure to resynchronise the personal body clock of the traveller, said procedure comprising controlling exposure of the body of the traveller to daylight.

Each said data series is preferably cyclic, and the displacement of one data series with respect to the other data series is preferably accomplished by relative phase displacement.

The device may be electronic and may be in the form of a calculator or in the form of a program for a calculator or for a wrist watch, or the device may be entirely manually operable.

Preferably, the representations of twenty-four hours on each data series will be in the form of a 24-hour clock.

Preferably, there will be electronic means or manual means for aligning the representations of the 24 hour-clocks of the first data series and of the second data series.

Preferably, the data series representing the personal body time of the traveller comprises representation of behavioural actions associated with the twenty-four hour representations, said association being on a principle of delay or of advancement of the personal body

clock by selected behavioural actions comprising controlling exposure of the traveller's body to daylight.

Preferably, in the electronic form of the device, said association will be retained and the organising and aligning will be effected by a program and circuitry with the readable display as a liquid crystal digital display.

In the manually operable form of the device, the data series may each be in the form of a relatively slidable scale; the organising of the scales may be effected by moving one scale relative to the second scale, the scales being associated in the form of a slide rule or as two manually rotatable concentric discs or dials of different diameters.

Preferably, the aligning means in the manually operable form of the device is a pointer or hand.

Preferably, for the manually operable form of the device, the scale representing the traveller's body time displays readable codes for guidance on the procedure for resynchronising the traveller's body clock.

Preferably, each device is accompanied by an explanatory leaflet.

Embodiments of the present invention will now be described, by way of example, by reference to the accompanying drawings, in which:

FIGS. 1 to 3 are plan views of three settings of one embodiment of a device according to the present invention for aiding resynchronisation of a traveller's body clock;

FIG. 4 is a second embodiment of a device according to the present invention for aiding resynchronisation of a traveller's body clock;

FIG. 5 is an exploded perspective view of an electronic pocket model of the device;

FIG. 6 is a longitudinal vertical cross-section of the device of FIG. 5 in its assembled condition;

FIG. 7 is a perspective view of the display face of a digital pocket model of the device;

FIG. 8 is a schematic electronic circuit diagram of a prototype electronic system for performing the invention; and

FIG. 9 is a schematic electronic circuit diagram of a production electronic system for performing the invention.

Referring to the drawings, there are shown devices for aiding resynchronisation of a traveller's body clock, the devices functioning on the axiom that exposure to daylight during the period 18.00 to 24.00 hours body time delays the body clock, whereas exposure to daylight during the period 24.00 to 6.00 hours body time advances the body clock.

Referring especially to FIGS. 1 to 3 of the drawings, the device 1 comprises a pointer 2 attached by a central rivet 3 to the common centre of two concentric dials 4, and 5. The upper dial 4, of smaller diameter, shows a 24 hour clock scale 6 of the traveller's body time. The lower dial 5, of larger diameter than the upper dial 4, shows a 24 hour clock scale 7 of time at the place of the traveller's destination. The upper dial 4 is additionally provided with colour shaded zones 8 and 9. On the dial 4, a red zone 8 encompasses the period 18.00 to 24.00 hours body time, which is the period for delaying a body clock, and a green zone 9 encompasses the period 24.00 to 6.00 hours body time, which is the period for advancing a body clock.

In use, the pointer 2 is first placed on the hour of the scale 6 of the upper dial 4 that represents the hour of the traveller's departure (FIG.1). The pointer 2 is advanced